

Claims

[c1] 1. For use in generating electrical energy from high altitude wind energy, apparatus comprising:
wind-driven electric generators;
a structure to hold said wind-driven generators
means to provide the lift necessary to hold said structure and generators at high altitude
a single tether comprising a high tensile strength light weight cord to hold said structure and said generators against the wind combined with insulated electrical conductors;
a winch at ground level for winding and unwinding the tether;
electrical equipment connected to the tether conductors at ground level to receive the energy transmitted therein and retransmit elsewhere or store said electrical energy and
means for positioning and maintaining said structure in a precisely defined location in a prescribed airspace despite the use of only a single tether.

[c2] 2. Apparatus as claimed in claim 1 in which the means to provide the lift consists of rotors of the type used by helicopters and other rotorcraft which may be either powered by electric motors through a tether or turned by the wind itself when constrained by a tether.

[c3] 3. Apparatus as claimed in claim 2 in which said rotorcraft are held in stable attitude by correcting deviations through altering rotor and airfoil functions using error signals provided to these controlling means indicative of determined attitude relative to desired attitude. .

[c4] 4. Arrays of apparatus as claimed in claim 1 controlled to operate and generate power in a relatively small prescribed airspace without interference between flying units of the arrays or their tethers.